CLAIMS:

1. A power supply module for high output currents, particularly a DC-DC converter, with

a plate-shaped carrier element (10) configured to interact with a planar inductor and having a plurality of conductive layers, which has a suitably formed opening (12) to receive a core element of the planar inductor,

on the component side is formed for automated mounting of electronic components (16), particularly a power semiconductor (14), and

on the output side has a contact arrangement (40) to discharge the high output current,

characterized in that

on the component side, a bridge element (18) is provided, which forms a conductor for the output current and has a conductor cross section greater than 1.5 mm^2 so that the bridge element, as a component independent of the carrier element, can be mounted and contacted on the carrier element by an automated assembly process.

2. A power supply module as claimed in Claim 1, characterized in that the conductor cross section is greater than 2 mm^2.

3. A power supply module as claimed in Claim 1, characterized in that the bridge element is made of nickel-plated, zinc-plated, or a combination of nickel-plated and zinc-plated copper material and has a substantially rectangular conductor cross section that extends perpendicularly to the component side.

4. A power supply module as claimed in Claim 1, characterized in that the bridge element, on a side facing the carrier element, has at least one projection type positioning segment (20) configured to interact with a corresponding recess formed in a component-side surface of the carrier element.

5. A power supply module as claimed in Claim 1, characterized in that the bridge element has a surface segment and/or flange segment (23) which in the mounted state on the carrier element extends parallel to the carrier element and is dimensioned and shaped to interact and/or engage with a pick-and-place machine for the automated assembly process.

6. A power supply module as claimed in Claim 1, characterized in that the power supply module is a synchronous rectifier and the bridge element is designed to connect a

synchronous power semiconductor (14) with a connector element as the contacting arrangement.

7. A power supply module as claimed in Claim 1, characterized in that the bridge element is designed for an output current greater than 60 amperes and has a conductor cross section greater than 4 mm^2.

8. A power supply module as claimed in Claim 7, characterized in that the bridge element is designed for an output current greater than 80 amperes.

9. A power supply module as claimed in Claim 1, characterized in that the bridge element is angled in a plane determined by the carrier element.

10. A power supply module as claimed in Claim 9, characterized in that the bridge element has a plurality of substantially rectangular angles.

11. A power supply module as claimed in Claim 1, characterized in that the bridge element on the contact side has a recess (24), which is formed such that the bridge element in its mounted state does not contact a track conductor segment of a

top side conductor layer of the carrier element extending in the region of the recess.

12. A power supply module for high output currents, particularly a DC-DC converter, with

a plate shaped carrier element (10) configured to interact with a planar inductor and having a plurality of conductor layers, which has a suitably shaped opening (12) to receive a core element of the planar inductor, on the component side is formed for automated mounting of electronic components (16), particularly a power semiconductor (14), and

on the output side has a contact arrangement (40) to discharge the high output current,

and wherein the carrier element is formed to interact with a plate-shaped cooling element (26) such that the cooling element realizes cooling of the core element of the planar inductor as well as an electronic component provided on the component side,

characterized in that

the cooling element on its side facing the carrier element in its assembled state has at least one trough-shaped indentation (28, 30, 32) integrally incorporated or formed in the cooling element material, which simulates a component side surface contour of the carrier element with mounted electronic

components and permits selective potting in the region of the trough-shaped indentation with a heat-conducting potting compound.

13. A power supply module as claimed in Claim 12, characterized in that the cooling element is made of an aluminum material and on a flat side facing away from the carrier element forms an outer enclosure wall of the power supply module.

14. A power supply module as claimed in Claim 12, characterized in that the heat-conducting potting compound is a silicon-based potting compound.

15. A power supply module as claimed in Claim 12, characterized in that, on the component side, a strip- and/or rail-shaped bridge element (18) is provided, which forms a conductor for the output current and has a conductor cross section greater than 1.5 mm^2 so that the bridge element, as a component independent of the carrier element, can be mounted and contacted on the carrier element by means of a preferably automated assembly process.

16. A power supply module as claimed in Claim 15, characterized in that the conductor cross section is greater than 2 mm^2.

17. A power supply module for high output currents, particularly a DC-DC converter, with

a plate-shaped carrier element (10) configured to interact with a planar inductor and having a plurality of conductor layers, which has a suitably formed opening (12) to receive a core element of the planar inductor, on the component side is formed for automated mounting of electronic components (16), particularly a power semiconductor (14), and

on the output side has a contact arrangement (40) to discharge the high output current,

characterized in that

the contact arrangement has an integrally formed fork-shaped connector element (40), which at one end has a plurality of finger segments (46) connected by a bridge segment (48) to interact with a downstream consumer unit, and at the other end has a flange segment (42), which fits against the bridge segment and is formed for automated soldering of the connector element to the carrier element by reflow soldering.

18. A power supply module as claimed in Claim 17, characterized in that the finger segments have a rectangular conductor cross section, which forms a round or polygonal shape at the end face.

19. A power supply module as claimed in Claim 17, characterized in that at least one end face of the finger segments has a thickening that forms a stop for a contacting printed circuit board element.

20. A power supply module as claimed in Claim 17, characterized in that, on the component side, a bridge element (18) is provided, which forms a conductor for the output current and has a conductor cross section greater than 1.5 mm^2 so that the bridge element, as a component independent of the carrier element, can be mounted and contacted on the carrier element by means of a preferably automated assembly process.

21. A power supply module as claimed in Claim 20, characterized in that the conductor cross section is greater than 2 mm^2.

22. A power supply module as claimed in Claim 17, characterized in that the carrier element is configured to interact with a plate-shaped cooling element (26) such that the cooling element realizes cooling of the core element of the planar inductor as well as an electronic component provided on the component side, and the cooling element on its side facing the carrier element in its assembled state, has at least one trough-shaped indentation (28, 30, 32) integrally incorporated or formed in the cooling element material, which simulates a component-side surface contour of the carrier element with mounted electronic components and permits selective potting in the region of the trough-shaped indentation with a heat-conducting potting compound.